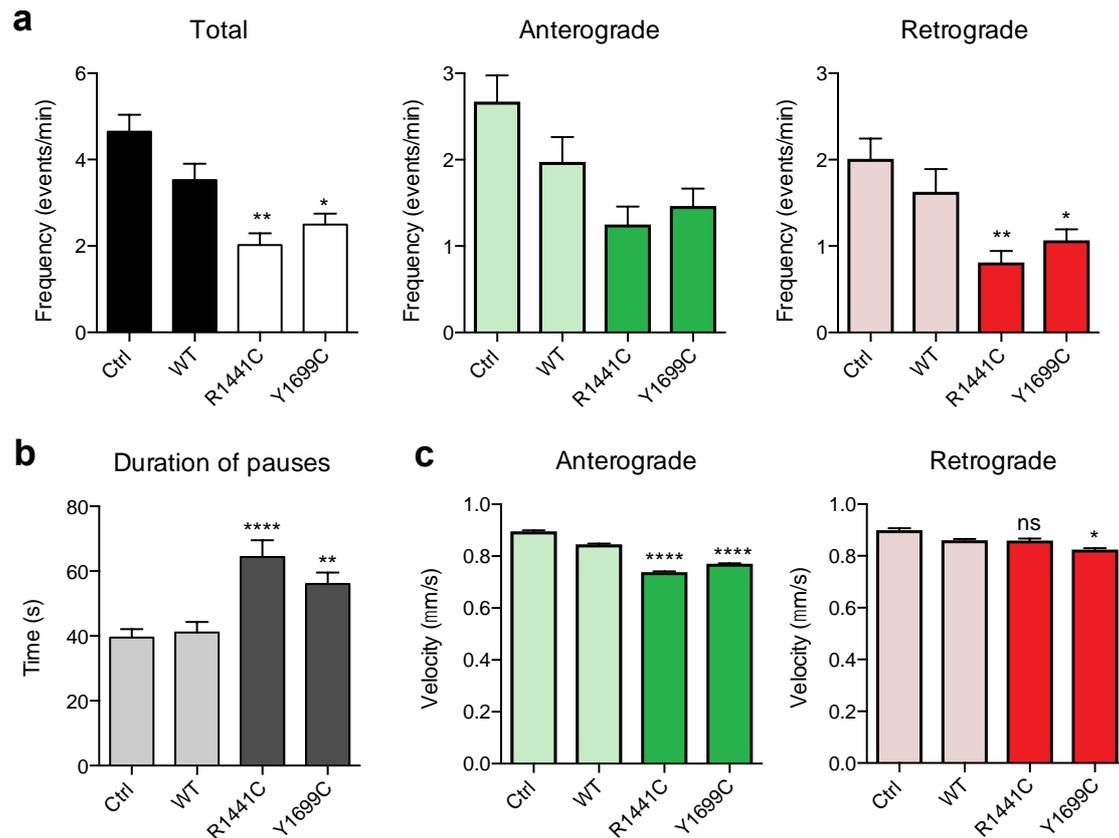


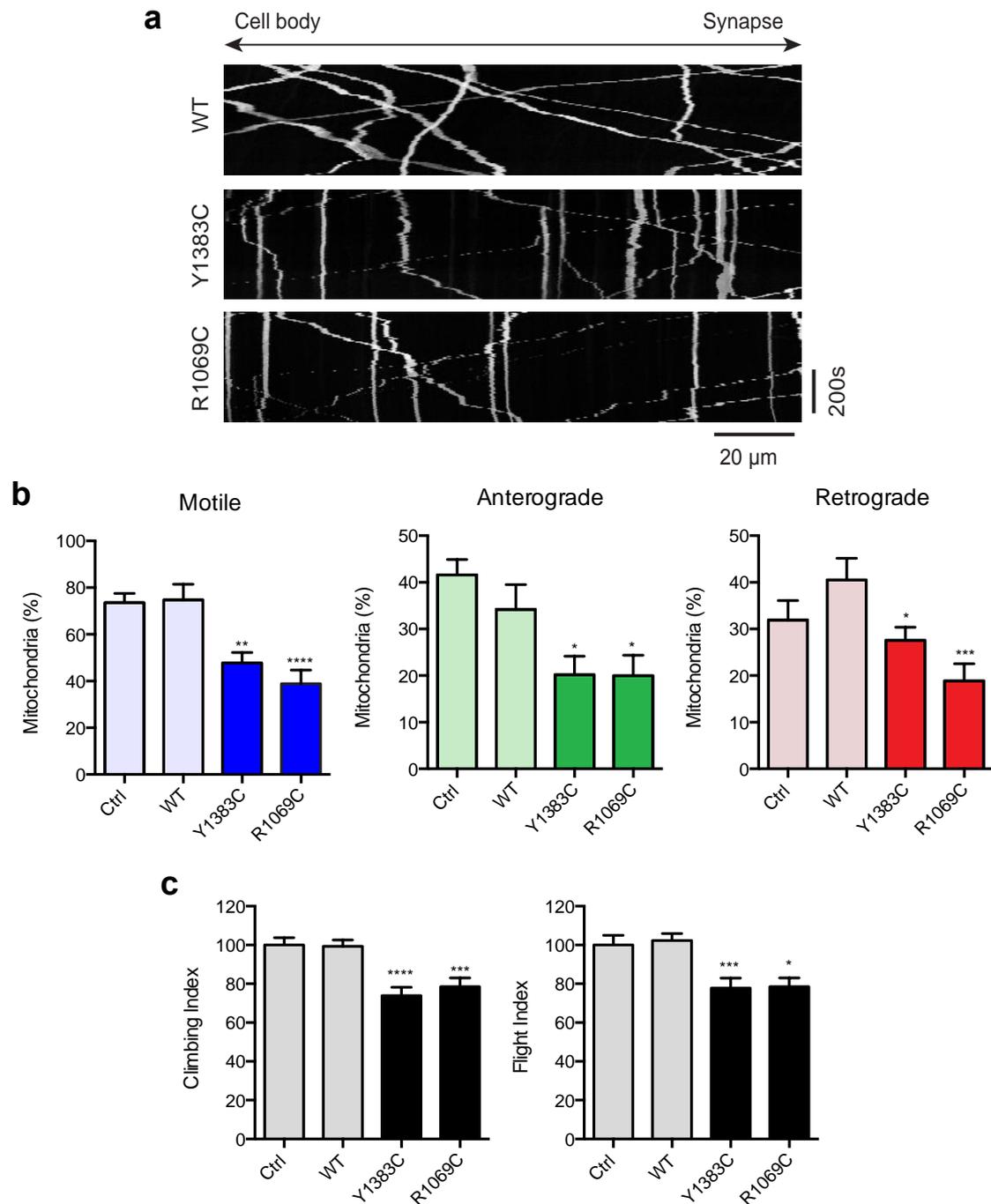
Increasing Microtubule Acetylation Rescues Axonal Transport And Locomotor Deficits Caused by LRRK2 Roc-COR Domain Mutations

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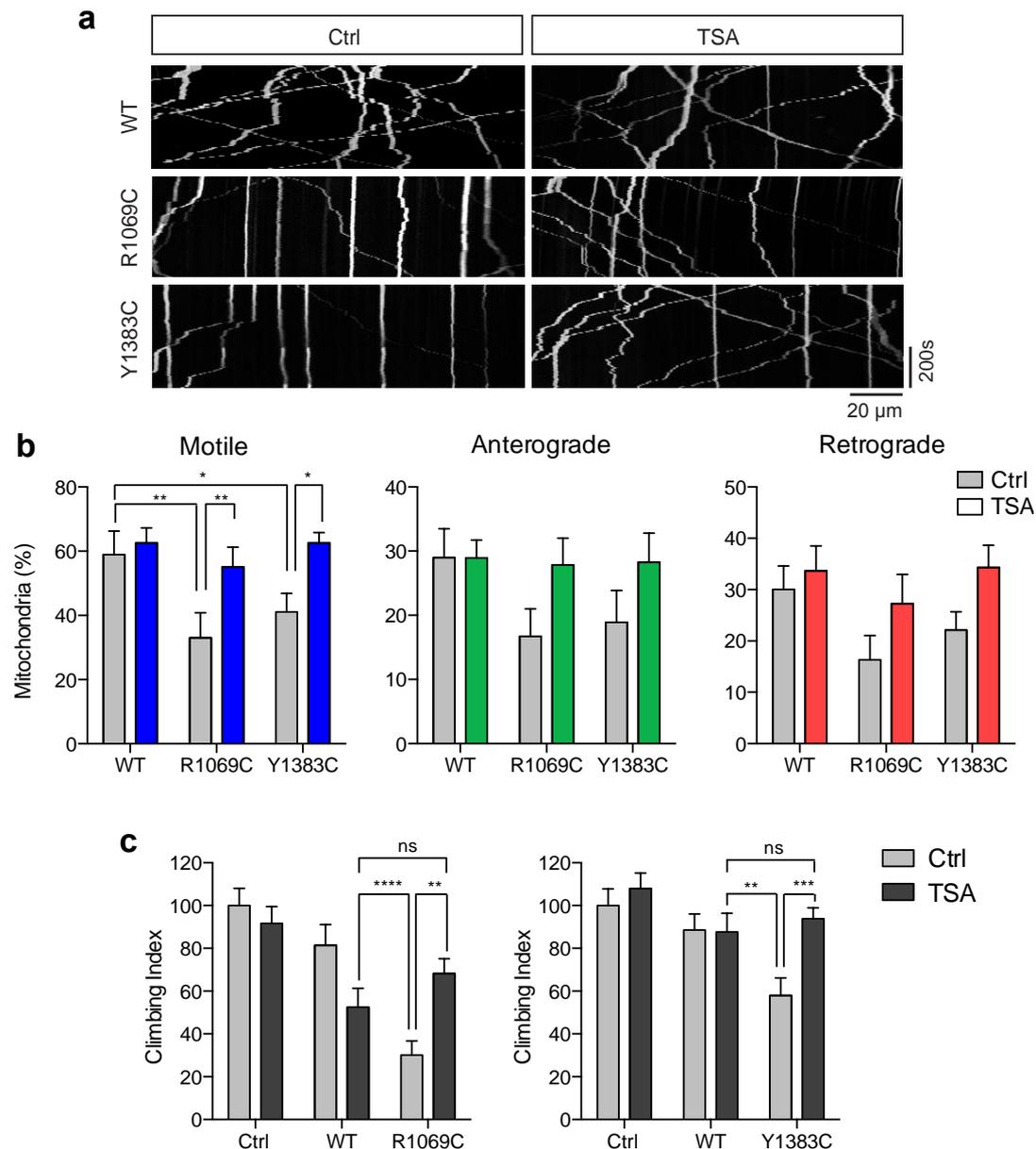
Supplementary information



Supplementary Fig. 1. Analysis of mitochondrial axonal transport parameters in rat cortical neurons expressing LRRK2 variants. (a) Frequency of movements expressed as events per minute for individual mitochondria. (b) Duration of pauses. (c) Velocity of single movement events. (a) N (mitochondria) = 208, 187, 245, 318; (b) N (events) = 1285, 802, 636, 1032; (c) N (events) = 1644, 1547, 1108, 1570. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, one-way ANOVA with Fisher's LSD post-hoc test.



Supplementary Fig. 2. Expression of *Drosophila* Lrrk transgenes with Roc-COR mutations inhibits axonal transport and locomotor ability. (a) Kymographs of mitochondria in *Drosophila* motor neurons expressing mito-GFP and indicated Lrrk variants. (b) Charts are mean \pm s.e.m. of quantified mitochondrial transport shown as percentage of total mitochondria. N (animals) = Ctrl: 10; WT: 9; R1069C: 11; Y1383C: 11 (c) Locomotion assays for climbing and flight behavior of motor neuron expressed Lrrk variants. Control is driver/reporter crossed to a lacZ transgene. N (animals) = Ctrl: 95; WT: 120; R1069C: 98; Y1383C: 104. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, one-way ANOVA with LSD post-hoc test.



Supplementary Fig. 3. Axonal transport and locomotion caused by mutant *Lrrk* is restored by TSA treatment. (a) Kymographs of mitochondria transport in *Drosophila* motor neurons expressing mito-GFP and indicated *Lrrk* variants. *Drosophila* were raised on food containing vehicle control (ctrl; black bars) or 10 μ M TSA (white bars). (b) Charts are mean \pm s.e.m. of quantified mitochondrial transport shown as percentage of total mitochondria. N (animals) = WT Ctrl: 10; WT+TSA: 10; R1069C Ctrl: 13; R1069C+TSA: 13; Y1383C Ctrl: 11; Y1383C+TSA: 11. (c) Locomotion assays for climbing behavior following vehicle control or TSA treatment. *Drosophila* were raised on normal food, then fed vehicle (ctrl) or TSA supplemented food for 5 days before testing locomotion. Transgenic expression is driven by D42-GAL4. Control is driver/reporter crossed to a lacZ transgene. N (animals) = Ctrl Ctrl: 84; Ctrl+TSA: 77; WT Ctrl: 48; WT+TSA: 40; R1069C Ctrl: 48; R1069C+TSA: 69; Ctrl Ctrl: 41; Ctrl+TSA: 45; WT Ctrl: 52; WT+TSA: 50; Y1383C Ctrl: 43; Y1383C+TSA: 80. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$, one-way ANOVA with LSD post-hoc test.